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# Pruning in Alberta

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# Pruning in Alberta

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*Proper pruning ensures healthy, vigorous plants by balancing growth, flowering and fruiting. Your efforts to learn the art and science of pruning will be rewarded. As your pruning skills improve, your ornamental plants will become more attractive and your fruit plants more bountiful.*

## Pruning tools

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There are tools designed specifically for pruning. The average home gardener requires a modest investment in the correct tools for pruning. You will need three basic tools: the pruning saw, the long handled lopper, and the hand pruner. Select good quality tools. Cheaper tools are usually made of inferior materials, and will probably have a shorter useful life.

Pruning saws are specially designed with teeth set at wider angles to allow cutting into green moist wood without binding. The only tool larger than a hand saw that should be used by an amateur pruner is some type of power saw for larger branches or whole trees. This type of work is best left to a professional pruner as it is both dangerous and requires special methods.

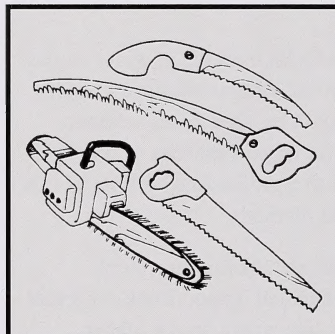
You can cut branches and stems that are smaller than 5 cm (2 inches) in diameter with a long-handled lopper. Look for a tool with well-attached handles, scissor-like action, and a rubber bumper just behind the pivot point. This rubber bumper helps absorb the shock when you cut through a large branch and prevents it from being transmitted up your arms and into your shoulders. Cut branches and stems that are smaller than 2 cm (3/4 inch) with a hand pruner (also called a secateur).

Many sizes and qualities of long-handled loppers and hand pruners are available, but there are only two basic designs: the anvil, and the hook and blade. The hook and blade design is preferred because it enables you to make a flush cut with little or no crushing of tissue. The anvil, by design, will not allow flush cuts and causes some crushing of tissue. Small stubs and crushed tissue can result

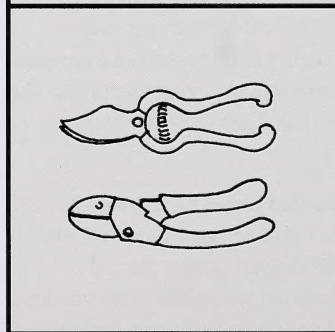
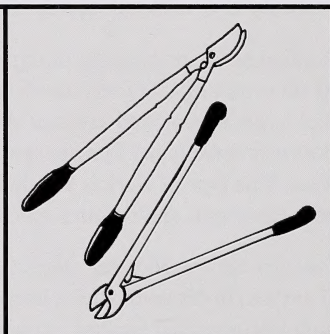
in increased healing times, which is detrimental to any healthy plant. The hook and blade design is a better tool.

Supplementary tools could include hand or powered hedge shears and a pruning knife. Select shears on the basis of a sharp cutting edge, the balance of the tool, the weight of the tool (the lighter the better, because you have to hold shears up for long periods of time), and the comfort of the tool to you as a user. Pruning knives can be anything from a small pocketknife to a kitchen paring knife or a specially designed pruning knife. When selecting a knife look to see how suitable it is for you and know the quality of the steel used in the blade. You must keep it sharp at all times because a dull knife does more damage than good.

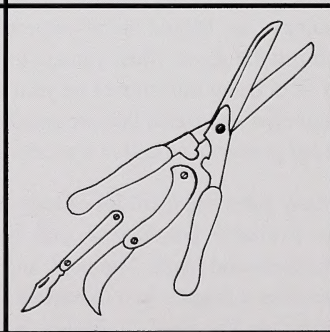
**Figure 1. Pruning saws**



**Figure 2. Long handled lopper**

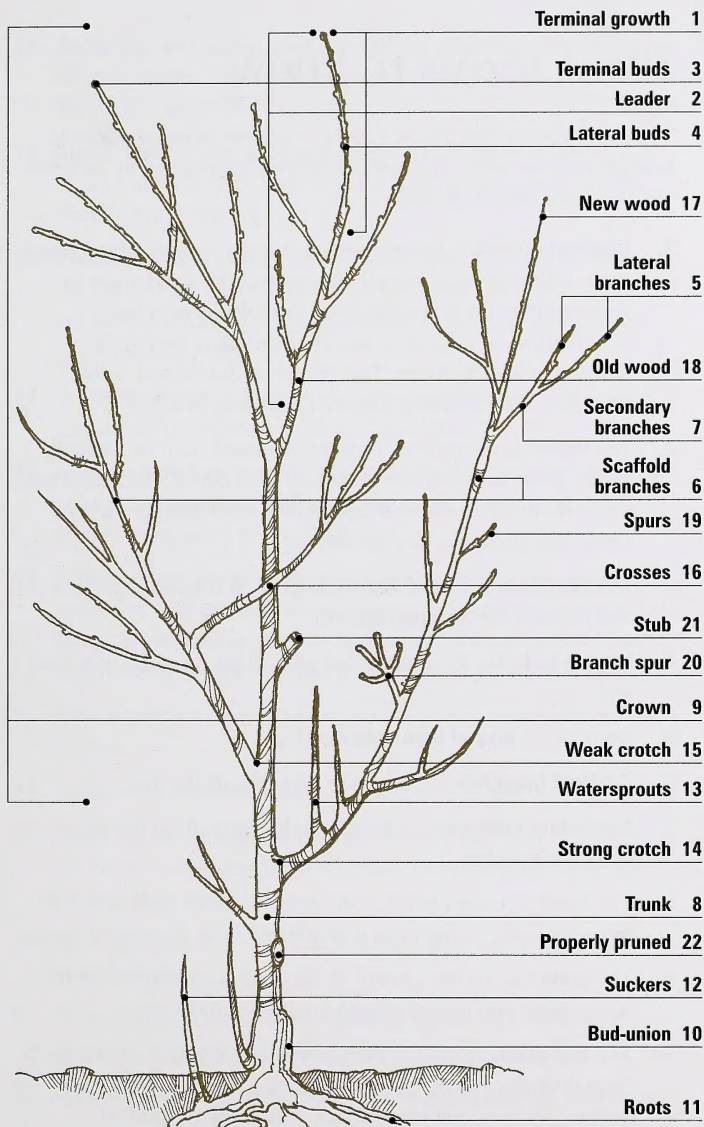


**Figure 3. Hand pruner (secateur)**



**Figure 4. Pruning knives and shears**





**Figure 5.** The numbered parts are described on the next two pages

# Plant terms to know

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The illustration of the tree in Figure 5 uses the terms you should become familiar with. The parts of the tree are marked by numbers and these are described below.

1. **Terminal growth** is the uppermost, usually central, growth on a stem. If this terminal growth is removed (by accident or by pruning) then the dominance this growth has over the remaining stem is broken, and another bud or buds will develop to take its place. This results in unchecked, wild growth in the remaining part of the stem or branch.
2. The **leader** is the central, vertical dominant stem of a tree or shrub. If the leader is cut or broken by accident, then the whole tree will display an unchecked growth until another stem or stems take over as a new leader.
3. **Terminal buds** are those buds that grow at the end of a stem and produce the terminal growth.
4. **Lateral buds** are those buds that grow from the sides of a stem and
5. from which **lateral branches** develop.
6. **Scaffold branches** are the main branches of the tree.
7. **Secondary branches** are branches that grow from the main scaffold branches.
8. The **trunk** or main branch is the original shoot from which all branches arise. Sometimes it is referred to as the central leader.
9. The **crown** is the top growth of the plant including all scaffold, secondaries and lateral growth arising from the trunk.
10. The **bud-union** or graft is the place where a portion of a branch (scion) of one variety has been joined to the root (stock) of another, to form one plant. Many fruit trees are grafted.

11. **Roots** are the underground parts of the plant that serve to anchor the tree, and take up moisture and nutrients required for the plant's survival.
12. **Suckers** are shoots arising from the root system below or just at ground level. This term usually refers to unwanted growth from below the graft.
13. **Watersprouts** are vigorous vertical shoots that usually arise on the top surface of main or secondary branches. These sprouts are usually caused by severe damage or heavy pruning of the top growth of a tree.
14. A **strong crotch** is one that is U-shaped and where the branch is attached to the trunk with a wide angle.
15. A **weak crotch** is one that is V-shaped and where the branch is attached to the trunk with a narrow angle. These types of crotches are prone to wind damage.
16. A branch that grows toward the centre part of a tree or shrub sooner or later **crosses** another growing outwards. Damage to bark can result from the two branches rubbing together; this usually calls for the removal of the inward growing branch.
17. **New wood** is a term used for growth put on during the current season.
18. Wood older than one season is referred to as **old wood**.
19. **Spurs** are structures that bear the flowers and fruit. Apple spurs are short, stubby and thick whereas European plum spurs may be very long and thin.
20. As a spur grows, it may develop side spurs and become a **branched spur**.
21. When pruning never leave a **stub** as this could be a site for infection and may never heal over.
22. **Properly pruned** branches leave no stub and quickly heal over.

# Basic principles of pruning

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Each type of tree or shrub requires a slightly different pruning method. The time of year pruning can be done successfully varies with the species.

The basic principles of pruning are few and easy to learn. But the novice, as well as the master pruner, must keep in mind the slight differences between plant materials before making a pruning cut.

- 1.** Visualize the shape of the plant at maturity. To do this, you must first be familiar with the natural growth habit of the plant in question.
- 2.** Remove dead, damaged and diseased wood.
- 3.** Select the main scaffold branches (if a tree) or the main stems you want to keep (if a bush) and remove all of the others. This is an application of the “work from large to small rule” that is basic to pruning: cut from the largest branch or stem to the smallest.
- 4.** Do corrective pruning by removing weak crotches, crossed branches, suckers and watersprouts.
- 5.** Thin out the crown to well-spaced, strong branches or stems, secondaries and laterals. This promotes a healthier plant by admitting more air and sunlight into the centre of the crown.
- 6.** Cut back to the branch collar (the swelling where the branch joins the stem) so as to leave the smallest wound possible.
- 7.** Remember that too much of anything is not always best. This is particularly true of pruning. You can always prune again next year.



# Pruning techniques

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There are four ways to prune: pinching, thinning, heading back and shearing.

**Pinching** is the removal of stem tips. This method controls terminal growth and allows laterals to grow faster.

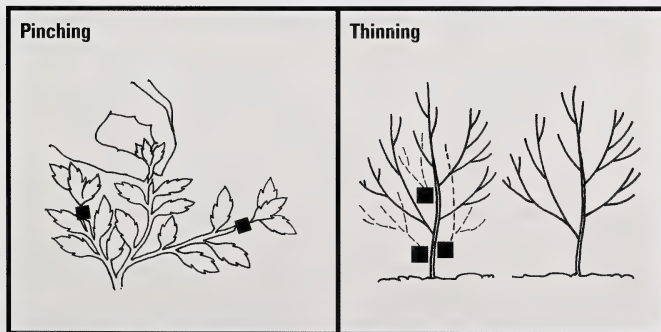
**Thinning** is the practice of removing whole branches to open out the crown. This practice is especially useful in fruit trees as it allows more fruit to be set on the inside of the tree.

**Heading back** is commonly practised on flowering shrubs to encourage thicker growth and more flower buds setting as a result. Removing the terminal growth and some of the laterals helps to create a more compact, strongly branched tree or shrub.

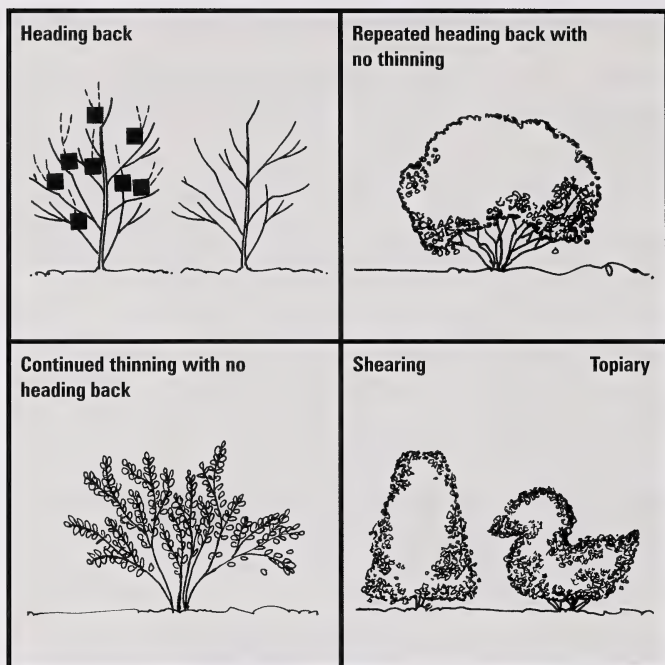
**Shearing** is practised on hedges and to shape specimen trees. It involves cutting back evenly all exposed areas of a shrub or tree to gain the desired effect. **Topiary** is the practice of shearing trees to direct their growth in an artistic way.

All four pruning techniques are used when pruning woody plant material.

**Figure 6.**



**Figure 6. *continued***



## Pruning deciduous ornamental trees

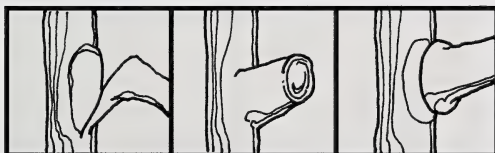
Prune trees from an early stage in their growth. This is when a good basic tree form can be created. Early, light pruning is inexpensive and results in a stronger healthier tree. The best time of year to prune depends on the species being pruned and its intended use in the landscape. Prune trees grown mainly for their foliage from late March to mid-April. But don't prune birch and maple trees this early. These two species have a tremendous sap flow until their first leaves have fully opened. Wait until mid-June to prune birch and maple.

Generally, ornamental trees are planted where their mature size can be accommodated. If this has been done, only minimal, corrective type pruning needs to be applied to the tree as it grows. Sometimes large limbs are damaged or grow in a direction necessitating their removal. A four-step cutting procedure should be followed to remove large, heavy limbs. Finish all large cuts by paring the cut edge smooth. Figure 7 shows this procedure.

**Figure 7A. Correct way to remove a branch in four steps – leaving the branch collar intact**



**Figure 7B. Wrong way to remove a large branch**



The angle of the pruning cut is also important. Always cut back to a bud that faces the outside of the tree. This way you reduce the possibility of crossing branches and too thick a crown. Determine the correct angle by placing the pruning tool so that the top of the cut is slightly above the top of the bud and the bottom of the cut is even with the bottom of the bud.

**Figure 8. Correct pruning angle on small branches**



**Correct**

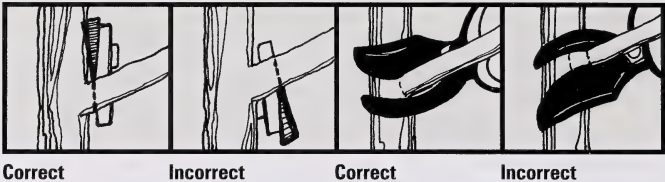
**Too far above bud**

**Too close to bud**

**Too angled**

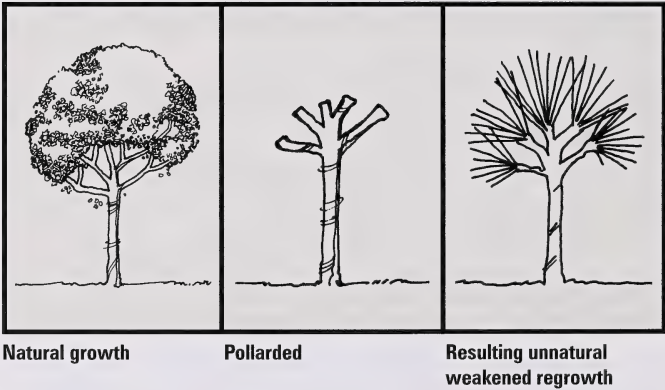
Remember to cut cleanly and leave no stub. The correct positioning of the pruning tool is important when doing this.

**Figure 9. Correct positioning of a pruning tool for a flush cut**



Pollarding results in very unsightly and weakened growth. It is not recommended. This kind of pruning becomes necessary when trees are planted in areas where there is not room for them to develop. It is also practised in areas where trees might interfere with power lines and pose a hazard. This type of pruning has to be done every couple of years, so it is usually very expensive. The best way to reduce pruning maintenance costs is to plant trees that do not grow as high as the power lines.

**Figure 10. Natural growth compared to growth of a pollarded tree**





# Deciduous tree recommendations

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## **Poplars, willows**

Plant these large, fast-growing trees in areas that allow adequate space for growth. If you are growing willows for their colourful bark, give them a heavy pruning to encourage new, more colourful wood. Do not prune Griffin poplar except, as for the other poplars, for corrective purposes.

## **Ash, elm**

Both ash and elm are widely planted as boulevard trees. Wider-croched scaffold branches on the elm will result in a slightly stronger tree. Both of these species are slow growing, large trees. Early training and thinning are the most important pruning requirements.

## **Crabapple, mountain ash, Prunus species**

These species are grown for their abundant floral display; some are also grown for their colourful foliage. Pruning should entail thinning to keep the crown open: before bloom in the case of the crabapple, after boom in the Prunus species. Directing strong scaffold branches is also important in ornamental trees. Crabapples and Shubert chokecherry are grafted onto suckering rootstock, so you will need to remove sucker growth annually.

## **Birch**

Birch require very little pruning. Do not allow weeping birch to form a low fork (1 to 2 m from the ground), as this will become a split crotch. The tree will naturally divide again at about 3 to 4 metres, which should be allowed. Remember to prune only in late June or early July to avoid excessive bleeding.

## Bur oak

This is the only true oak that is hardy in Alberta. It is slow growing with a strong taproot therefore, it is not easily moved. Prune out double leaders.

## Maple

Crown thinning is required annually on maples but wait until late June or early July to avoid excessive bleeding.

## Larch

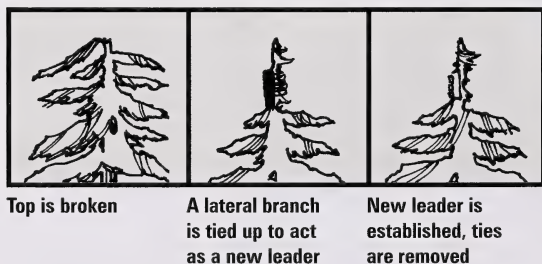
This is the only deciduous-coniferous tree growing naturally in Alberta. Prune out double leaders.

# Pruning evergreen trees

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The main evergreen trees in Alberta are spruce and pine. Evergreens grown as specimen trees should not require anything except corrective pruning, i.e., cutting out dead, damaged, or diseased branches. If the leader of an evergreen tree is either cut or accidentally broken, immediately tie up one of the top lateral branches to form a new leader. If this is not done, there will be two or more terminal growths competing for dominance. The resulting double or triple leader will have a very weak crotch that is susceptible to wind damage.

**Figure 11. Leader damage**

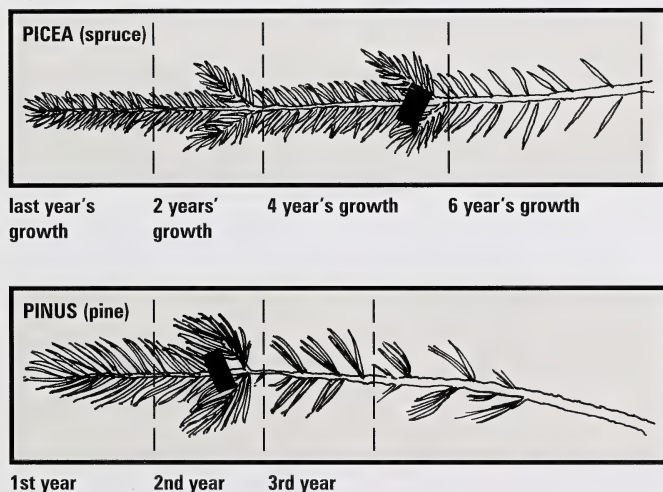


Limit pruning pine and spruce to partially removing the new growth (candles) at the terminal of each branch or twig. Pinching back up to one half of this growth on pines and cutting spruce back with hedge shears will tend to contain the growth in the current year. If you pinch back every year, you will have a denser, bushier looking tree. Do this after the candles have elongated, but before the new needles have opened out. Usually late May is the best time to pinch back the new growth.

If you cut back into old wood that has no needles on it, then that branch will probably die. As Figure 12 shows, you can cut back spruce back further than you can pine.

Pine and spruce have a natural needle cast, so they are not the best types of tree to use as a hedge material. If you maintain them at a constant height and width, they will tend to become very thin. This makes for a very unsightly hedge.

**Figure 12. New growth on spruce and pine**



**Needles of spruce hold for six to seven years; pine needles average three years before dropping. Spruce withstands more extensive pruning.**

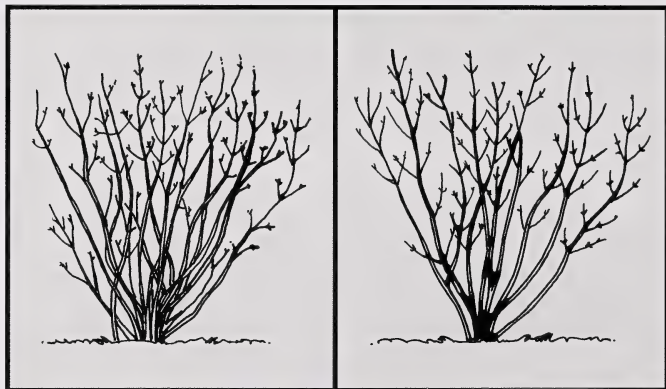
# Pruning shrubs

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Shrubs are grown for the beauty of their foliage, stem colour or bloom, or for their screening effect as a hedge. Sometimes these purposes are combined, as in a hedge of lilac or red osier dogwood. There are many different kinds of shrubs and many different ways to prune them, but some general rules of thumb can be applied (with exceptions) to shrubs. Shrubs that bloom before June 20 should be pruned immediately after the bloom period. Shrubs that bloom after June 20 and are grown for foliage or stem colour should be pruned in the dormant season or just before growth appears in the spring.

There is a commonly held, but quite incorrect idea, that all shrubs should be pruned, and pruned hard, each spring. This may take the form of shearing the shrub into a neat ball or severely cutting back branches to keep the shrub within bounds. Both techniques result in a misshapen, ugly specimen with few or no flowers.

**Figure 13.**



**Unpruned shrub**

**Shrub pruned to remove about one-third of the old wood and most of the crossing branches. Most flowering buds on new wood remain.**



**Figure 13. *continued***



**Sheared shrub still has too many old and crossing branches, while many important flowering buds have been cut off. Not recommended.**

If you are in doubt as to when to prune, it is probably preferable to leave the shrub alone. Most shrubs have a naturally graceful growth habit and only require pruning every other year. Some shrubs only require a low maintenance pruning schedule; one that removes three to four of the old stems and allows three to four new ones to grow each year. Shrubs should have corrective pruning done each year.

An understanding of the basic principles behind pruning and knowledge of the growth habit and the method of flowering of the plant concerned are important, particularly the age of the wood on which the flowers are borne.

## Shrub recommendations

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### **Early flowering shrubs (bloom prior to June 20)**

These shrubs bloom from buds set on last year's growth and your aim should be to promote more flower buds for the next year. To accomplish this you must encourage strong new growth that will set buds during the current growing season. Prune immediately after bloom has finished. Prune by thinning out weak stems and by heading back selected stems to promote strong lateral shoot development. Unpruned shrubs of this type usually become twiggy

and ungainly with few flowers each season. Early flowering examples are: some mock orange varieties (*Philadelphus*), lilacs (*Syringa*), some spirea varieties (*Spirea*), and flowering plums (*Prunus*).

### **Late flowering shrubs (bloom after June 20)**

These shrubs bloom mainly on wood grown during the current year, but some do bloom from buds set the previous year. If the bloom period starts near the end of June (in the case of some potentillas) the first early flowers could be from buds set on one-year-old wood. The remainder of the summer bloom would be on current growth. By pruning, you want to create a large number of strong, current year twigs and thereby a large number of flower buds. Potentillas retain their shape naturally, so they only require minimal pruning and perhaps some annual thinning. Spireas, on the other hand, usually require severe cutting back of all stems to only two to four buds from the base to encourage new growth for late summer bloom. Lilacs and honeysuckles require regular pruning, in the case of lilacs to keep them from becoming thick and overgrown.

### **Foliage and stem colour shrubs**

The desired effect you want to achieve is that of either a large mass of coloured (or variegated) foliage, or the production of many new woody stems for best winter colour. Both entail pruning hard each spring to force a great deal of new twiggy growth. To be successful, you must also feed and water these shrubs well to keep them healthy and vigorous. Some people prefer to cut almost to the ground each year; others will allow a basal framework to develop and cut back to that frame each spring. Both methods will accomplish the same objective.

### **Evergreen shrubs**

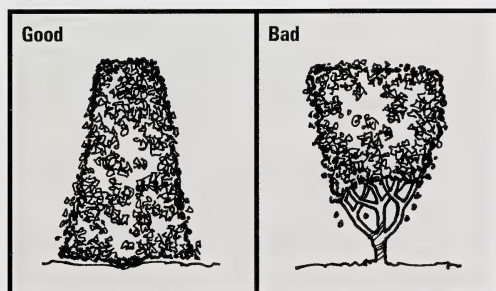
Most evergreens require minimal, if any, pruning. They should, if space allows, be allowed to develop naturally. The occasional removal of a wayward shoot that detracts from the overall symmetry is usually all that is required. Juniper responds well to having vigorous shoots trimmed back to a side branch. Cedars

respond well to shearing to help keep wayward shoots in check and maintain the overall shape of the plant. Mugo pine can be kept dense by pinching new candles in half each spring.

## Hedges

Hedges require early pruning to encourage dense basal growth and further pruning to keep the basal growth well leafed out. The top of a hedge should be narrower than the base so that it will not cast shade on the lower branches. If the hedge base is shaded, it becomes leggy and open and will not serve the purpose of the hedge.

**Figure 14. Hedge cutting**



## Pruning roses

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Although they could take a full book themselves, this will be a short note on roses. Most people have a rose or two in the home garden; whether these are newly purchased tea roses or are hardy shrub roses will make no difference to these instructions.

In the wild, roses produce strong new shoots from near the base of the plant each season. In the following years the secondary, or lateral growth from these shoots becomes progressively weaker.

Food taken in by the roots is directed to new growth and eventually the original shoots are starved out – a natural but slow method of pruning. Pruning roses short-circuits nature by cutting away the old shoots and encouraging vigorous disease-free new growth and a large number of flowers.

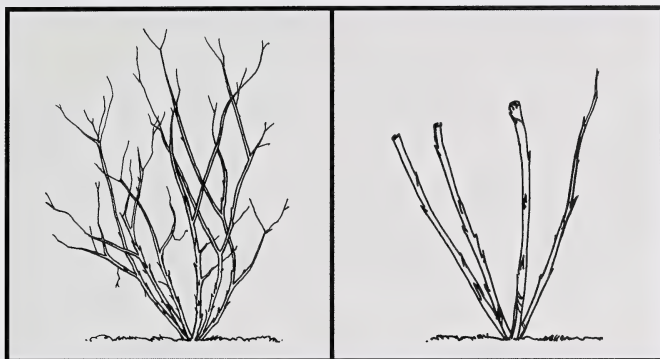
### **Rules of thumb for pruning roses**

1. Cut with sharp tools above a new bud at the correct angle.
2. Cut back into healthy wood. If the pith is brown or discoloured, cut the shoot back until healthy white pith is reached or to a strong vigorous bud.
3. Cut to an outward pointing bud to encourage an open centre habit.
4. Only allow one shoot to grow from a pruning cut.
5. Completely cut out any diseased, dead or damaged growth along with any weak, spindly growth.
6. Keep all branches well spaced to allow free airflow through the plant and to allow light to reach all leaves. This lessens the likelihood of such diseases as black spot and rose mildew, which thrive under stagnant air conditions.
7. Remove pruned branches from the area to reduce the possibility of spreading disease. Place them in the garbage or, if allowed, burn them.

More detailed rose pruning methods should be obtained by reading other manuals that cover all aspects of rose growing.



**Figure 15. Roses produce flower buds only on wood produced in the current season. Old wood can be severely pruned as shown**



## Pruning fruit trees

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There are three principal methods of training fruit trees:

**Central leader system:** The central leader is allowed to grow unchecked. This results in a tree that is usually so large you need a ladder to pick the fruit. Such trees make fruit harvesting less convenient and riskier.

**Modified leader system:** The young tree is allowed to grow naturally but the main scaffold branches are selected at well-spaced intervals. Once five to seven scaffolds are selected, the leader is cut out (modified) and the resulting tree is shorter in overall height and usually wider in spread. This is the preferred method for training fruit trees in Alberta.

**Open centre system:** This is a more severe modification of the central leader (usually cut between 0.75 to 1 m from the base) resulting in a low-headed tree that has a number of scaffold branches close to the base of the tree; this is inherently a weaker structure. This method is not recommended for prairie conditions.

Each species of fruit tree is pruned in a slightly different manner because of the placement of fruit buds (either spurs, shoots or both) and general differences in growth habit.

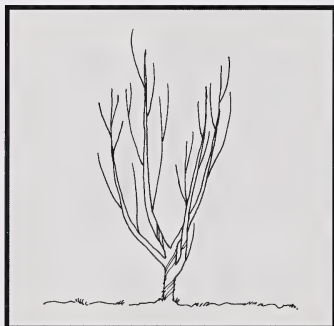
**Figure 16. Central leader system**



**Figure 17. Modified leader system**



**Figure 18. Open centre system**



## Apple

Fruit is borne at the ends of spurs that form on branches two years old or older. Some fruit is also borne on new one-year-old wood. As pruning is done to encourage fruit spur development, thinning out entire branches (rather than heading back) is the most desirable practice. Spurs may live for eight to 10 years.

## **Plum**

Fruit is borne on lateral spurs, which may be 1 cm (Japanese types) to 1 m long (European types). The bearing life of the spurs is from six to eight years. Pruning should be limited to creating a strong main frame on the tree with little or no heading back.

## **Apricot**

Fruit is borne on one-year-old shoots and on short spurs which carry most of the crop. The spurs only live two to three years, therefore, pruning should be heavy enough to continue new growth and to develop new spurs to keep the tree bearing. The modified leader system is recommended.

## **Pear**

Fruit is set on spurs that have a long life. Pruning is almost identical to that for apple trees. More scaffolds can be left on a modified leader frame.

# Pruning bush fruit

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## **Raspberries**

There are four types of raspberries grown in Alberta: red and yellow, black and purple. Pruning procedures for red and yellow raspberries differ from those for black and purple raspberries.

Red and yellow raspberries grow canes in their first season with no fruit. In the second season, the canes grow lateral shoots that bear fruit. At the end of the second season, the fruit bearing canes die. Pruning entails cutting these dead canes in late summer or early spring and thinning weak new canes to promote only strong canes in each clump.

Black and purple raspberries grow new canes with laterals in their first season. In the second season, more laterals are produced and all laterals will flower and bear fruit. The canes die after bearing fruit. Pruning should entail cutting one year old canes down to about 0.5 to 0.75 metres, which will encourage more lateral

development in the second season, which in turn will result in a heavier crop. The pruning out of two-year-old, spent canes and thinning out the weak new canes should be practised each season.

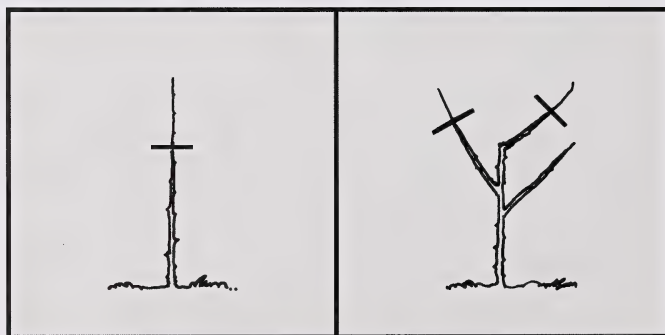
## Currants

Red, white and black currants are grown in Alberta. Red and white currants bear fruit on spurs of two and three-year-old canes. Older canes bear inferior fruit, so pruning is aimed at keeping old wood thinned out and new wood growing in. The well pruned red or white currant bush will have three stems each of three, two and one-year-old wood. Black currants, on the other hand, bear their fruit on last season's growth. It is, therefore, necessary to keep new growth coming in and old growth almost totally cut back. Ideally black currants should have nine canes with three to four, two-year-old canes and five to six canes from the previous year's growth.

## Gooseberries

Gooseberries belong to the same genus as currants (*Ribes*) but are pruned to have nine canes with three each of one, two and three-year-old canes. Fruit is borne along the sides of one-year-old shoots and on spurs on two and three-year-old wood.

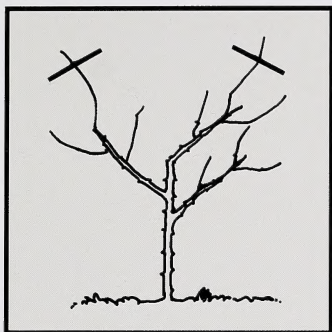
**Figure 19. Pruning currant and gooseberry**



One year branch

Two year branch

**Figure 19. *continued***



**Three year branch**

### **Bush cherries (Nanking, Korean and Mongolian)**

Bush cherries are treated the same as gooseberries with nine stems; three each of one, two and three-year-old wood. Pruning should be aimed at keeping the bushes open to allow fruit to set within the centre of the bush.

### **Saskatoons**

Fruit is borne on one-year-old and older wood with the youngest branches bearing the largest, sweetest fruit. Prune to control height (2 to 2.5 m); thin the centre to keep it open and cut off low branches.









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